

Accelerometer for Space Applications Based on Light-Pulse Atom Interferometry, Phase II

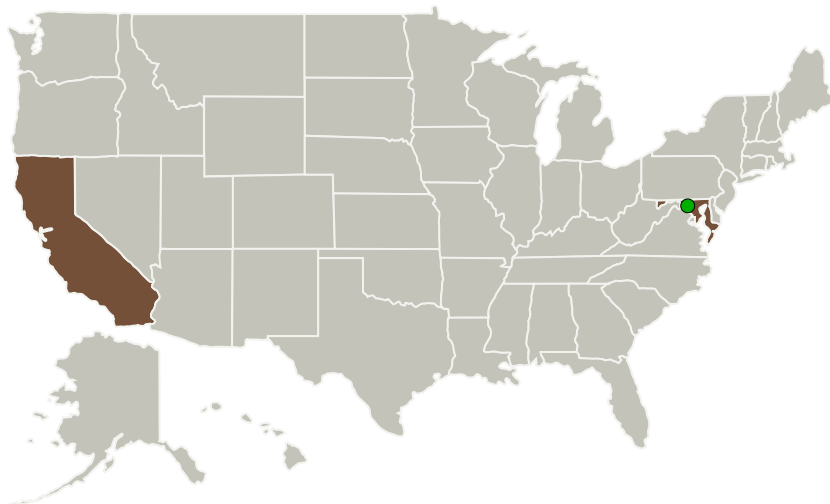
Completed Technology Project (2012 - 2014)



Project Introduction

We propose to build a compact, high-precision single-axis accelerometer based on atom interferometry that is applicable to operation in space environments. Based on our successful Phase I design, the proposed accelerometer emphasizes reliable operation and exceptional acceleration sensitivity. It incorporates several innovative features that make it appropriate for a variety of space-based and terrestrial applications. Phase II will result in a completed sensor build, including a sensor head, laser system and electronic control system. Space-based inertial sensors based on atom interferometry are a compelling technology for both technological and scientific applications because of the exceptionally high performance that can be enabled by long interrogation times with cold atoms in a microgravity environment.

Primary U.S. Work Locations and Key Partners



Organizations Performing Work	Role	Type	Location
AOSense, Inc.	Lead Organization	Industry	Sunnyvale, California
 Goddard Space Flight Center(GSFC)	Supporting Organization	NASA Center	Greenbelt, Maryland

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Organizational Responsibility

Responsible Mission Directorate:

Space Technology Mission Directorate (STMD)

Lead Organization:

AOSense, Inc.

Responsible Program:

Small Business Innovation Research/Small Business Tech Transfer

Project Management

Program Director:

Jason L Kessler

Program Manager:

Carlos Torrez

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Primary U.S. Work Locations

California

Maryland

Project Transitions

 **December 2012:** Project Start

 **December 2014:** Closed out

Closeout Documentation:

- Final Summary Chart(<https://techport.nasa.gov/file/137308>)

Images

Project Image

Accelerometer for Space Applications Based on Light-Pulse Atom Interferometry
(<https://techport.nasa.gov/image/135761>)

Project Management (cont.)

Principal Investigator:

Adam Black

Co-Investigator:

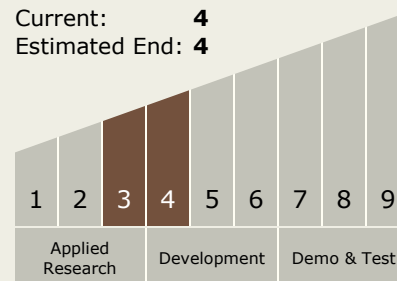
Adam Black

Technology Maturity (TRL)

Start: **3**

Current: **4**

Estimated End: **4**



Technology Areas

Primary:

- TX17 Guidance, Navigation, and Control (GN&C)
 - TX17.2 Navigation Technologies
 - TX17.2.3 Navigation Sensors

Target Destinations

The Sun, Earth, The Moon, Mars, Others Inside the Solar System, Outside the Solar System